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(54) **ANCHORING MEANS**

VERANKERUNGSMITTEL

MOYEN D'ANCRAGE

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(73) Proprietor: **Garot, Wouter**
2566 GN Den Haag (NL)

(72) Inventor: **Garot, Wouter**
2566 GN Den Haag (NL)

(74) Representative: **Algemeen Octrooi- en Merkenbureau**
P.O. Box 645
5600 AP Eindhoven (NL)

(56) References cited:
EP-A2- 0 530 895
AT-B- 374 917
FR-A1- 2 422 919
JP-A- 11 183 041
US-A- 5 083 424

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Description

[0001] The invention relates to an anchoring means according to the preamble of claim 1

[0002] Such an anchoring means is known from the Dutch patent 193.073. In this known embodiment a relatively large mid section and perpendicular to this mid section folded short arms or lips are applied.

[0003] As such this known anchoring means suffices, but with some lining materials and/or under difficult working conditions when applying the lining material on objects it may happen that the space between the anchoring means and the object is not thoroughly filled with lining material and underneath the anchoring means a non filled space or "air chamber" remains, which is unwanted.

[0004] According to the invention arms interconnected with the mid section of the anchoring means are bend with respect to the mid section over an angle between 20° and 40° whereas the free ends of the arms interconnected with the mid section are bended with respect to the arms such that the free ends extend parallel to the plains, that are positioned in essence perpendicular to a plain extending parallel to the mid section.

[0005] In practise it has been experienced that for this embodiment of the anchoring means according to the invention applying the lining material effectively between the given object and the anchoring means can be established without danger of remaining "air chambers" between the anchoring means and the object to which the anchoring means is applied, such that the lining applied is effected very effectively.

[0006] The invention will be explained in detail with respect to the accompanying figures.

Figure 1 shows a top view of a blanked out flat plate part, from which the anchoring means is being manufactured by folding the plate parts.

Figure 2 shows a side view of an anchoring means.

Figure 3 shows a view of the anchoring means shown in figure 2 in the direction according to arrow III in figure 2.

Figure 4 shows a pin being used for attaching an anchoring means to an object.

[0007] The starting piece shown in figure 1 for forming the anchoring means is obtained by blanking out a polygonal plate section or starting plate. Therein the starting piece is build up of a multigonal mid section 1, in the embodiment shown being a substantially hexagonal mid section. It may be clear that also other multigonals are considered, such as quadragonal, pentagonal, and octagonal. A too small or too large number of arms will not benefit the functionality and robustness of the anchoring means. To the mid section 9 six legs 2, forming one part with the mid section, link to the circumferal edge of the mid section, which legs are separated from one another by blanked out slots 3. Therein the width of each leg 2 increases gradually in a direction turned away from the mid section 1, whereas the free ends 4 of legs 2 have a rectangular form. An increasing width provides amongst others a improved accessibility, whereby air chambers are prevented, and further sufficient robustness. A rectangular form provides in particular a good fixture with the base. In each of the legs a further slot like hole 5 is formed by blanking out in a longitudinal direction of the leg. The slot like holes preferably have a relative surface, with respect to that of the legs, which is between 30 and 100% thereof, such as 50%. This provides a good accessibility and maintenance of robustness. In the hart of the mid section 1 a round hole 6 is applied.

[0008] For the manufacturing of the anchoring means as shown in figures 2 and 3 the legs 3 are bended over the bending lines 7 with respect to the mid section 1 as is schematically indicated in figure 1 over an angle α between 20° and 40°, such as somewhat smaller than 30°. Other angles will not be functional, in a sense that for instance air chambers will remain. Further an anchoring means having larger angles is difficult to manufacture, and it is also more sensitive to breakage. In comparison to the anchoring means as disclosed in NL 193.073 there are important differences. A further advantage of the present anchoring means is that the concrete is easier to be positioned. This reduces the chance of mistakes when positioning, such as the appearance of air chambers, insufficient attachment, increased sensitivity to breakage, etcetera. As a consequence less or no anchoring means have to be removed and placed again.

[0009] A further important difference in comparison to the anchoring means disclosed in NL 193.073 is that the present free ends extend parallel to plains, which are substantially perpendicular to a plain extending parallel to the mid section. Also this difference provides the advantages mentioned above.

[0010] The free ends 4 of legs 2 are bended with respect to legs 2 along folding lines 8 schematically shown in figure 1 in such a way that the free ends 4 of legs 2 extend parallel to plains, which extend perpendicular to a plain which is parallel to the mid section 1. The length of a part of a leg in between folding legs 7 and 8 is in a radial direction measured from the hart of the hole 6 about equal to the distance between two folding lines 7 which are positioned opposing each other, and limiting the mid section 1. Such a length provides extra robustness and stiffness to the construction, as well as an improved manageability. The functionality thereof is as a consequence improved. Also from a aesthetic point of view the present embodiment appears neat and tidy.

[0011] In an example the plate section had a thickness of between 1.2 mm and 3.0 mm, preferably a thickness of between 1.5 mm and 2.0 mm. A too large thickness has as a consequence that the present anchoring means is difficult or not manageable for a person that is applying the anchoring means. A too small thickness has as a consequence that the anchoring means is for example mechanically too weak.

[0012] As is shown further in figure 3 between the

bended legs 2 and the mid section 1 a connection part in the form of a nut 9 is welded in the area of a hole 6 being formed in the mid section.

[0013] For the attachment of the anchoring means to an object formed out of metal, which is to be applied with a fire proof and/of a wear resistant lining material, use is made of pens or styles as is shown in figure 4.

[0014] Such a pin 10 is build from a massive shaft 11, which shaft forms a single part with an external screw thread 12 being provided thereon. Thereby the external diameter of the part 12 is smaller then the external diameter of the part 11, such that at the transition between parts 11 and 12 a collar 13 is formed.

[0015] For attaching of the required number of anchoring means to an object provided the lining pins 10 are being welded to the object with an end thereof turned away from the screw tread end 12, for instance by pressing the pins with a suitable tool against the wall and heating the ends of the pins that are to be welded.

[0016] Subsequently the anchoring means are applied to the pins which are welded to the object by screwing an anchor means on each pin using the nut 9 welded to each respectively anchoring means. By screwing the anchoring means to the pin the nut 9 will at a given moment come in contact with collar 13 whereby it is prevented that the anchoring means is screwed too far to pin 11 and further that the anchoring means is at a required distance in each instance with respect to the object to be lined and unwanted deformation of the anchoring means will be prevented.

[0017] In practice it is observed that in particular by the acute development of the relatively long arm 2 being connected to the mid section 1, that can resiliently diverse, the space in between the anchoring means and the object to be lined can effectively be filled with the lining material in an easy way as can be accomplished and the presence of optional air chambers can be prevented in the space between the anchoring means and the object to be lined.

Claims

1. Anchoring means for providing a fireproof and/or wear resistant lining on an object made of metal, wherein the build-up of a polygonal folded base portion is intended to be fixed to the object by means of a to the object welded pin, which is provided with an anchoring thread for receiving an attachment part attached to a polygonal mid section of the anchoring means, comprising an internal thread, wherein lips which extend transversely to said polygonal base portion, join the edges of said base portion, which lips are bend over an angle with respect to said mid section and having mutually enclosing bending lines, **characterised in that** the arms joined with the mid section of the anchoring means are bend with respect to the mid section over an angle between 20° and 40°, whereas the free ends of the arms joined with the mid section are bend with respect to the arms such that the free ends extend parallel to the plains, that are positioned in essence perpendicular to a plain extending parallel to the mid section.

2. Anchoring means according to claim 1, **characterised in that** the arms are bend with respect to the mid section over an angle between 20° and 30°.

3. Anchoring means according to any one of the preceding claims, **characterised in that** measured in a radial direction the length of an arm in between folding lines around which the arm is bended with respect to the mid section and the folding line around which the free end of the arm is bend with respect to the remaining part of the arm is about equal to the distance between two folding lines which are positioned opposing each other and around which two arms are bend with respect to the mid section.

4. Anchoring means according to any one of the preceding claims, **characterised in that** the width of an arm increases gradually in a direction turned away from the mid section.

5. Anchoring means according to any one of the preceding claims, **characterised in that** in an arm a further slot like hole is provided in a longitudinal direction of the arm.

6. Anchoring means according to any one of the preceding claims, **characterised in that** a bend free end of an arm has an essentially rectangular form.

7. Anchoring means according to any one of the preceding claims, **characterised in that** the plate section has a thickness of between 1.2 mm and 3.0 mm, preferably a thickness of between 1.5 mm and 2.0 mm.

8. Method for applying an anchoring means according to any one of the preceding claims using an to the object attached pin, which pin is provided with an anchoring thread, **characterised in that** use is made of a to the object welded pin, which is provided with a part having an external anchoring thread provided on an end thereof turned away from the object, which part fits to a part of the pin having a larger diameter, such that at the transition between the part having an anchoring thread and the part of the pin having a larger diameter a collar is formed, coming into contact, by screwing the anchoring means onto the pin, with the attachment part, comprising an internal anchoring thread attached to the mid section of the anchoring means.

Patentansprüche

1. Verankerungsmittel zum Bereitstellen einer feuerfesten und/oder verschleißbeständigen Verkleidung an einem Gegenstand aus Metall, wobei der Aufbau eines polygonalen gefalteten Basisbereichs an dem Gegenstand durch einen an den Gegenstand angeschweißten Stift angebracht werden soll, der mit einem Verankerungsgewinde zur Aufnahme eines Befestigungsteils versehen ist, das an einem polygonalen Mittelabschnitt des Verankerungsmittels befestigt ist, der ein Innengewinde aufweist, wobei Lippen, die sich quer zu dem polygonalen Basisbereich erstrecken, sich an die Ränder des Basisbereichs anschließen und die Lippen um einen Winkel bezüglich des Mittelabschnitts gebogen sind, und wobei die Lippen einander umschließende Biegelinien haben, **dadurch gekennzeichnet, dass** die mit dem Mittelabschnitt des Verankerungsmittels verbundenden Arme um einen Winkel zwischen 20° und 40° bezüglich des Mittelabschnitts gebogen sind, wohingegen die freien Enden der mit dem Mittelabschnitt verbundenen Arme bezüglich der Arme derart gebogen sind, dass die freien Enden sich parallel zu den Ebenen erstrecken, die im Wesentlichen senkrecht zu einer Ebene positioniert sind, die sich parallel zu dem Mittelabschnitt erstreckt.

2. Verankerungsmittel nach Anspruch 1, **dadurch gekennzeichnet, dass** die Arme bezüglich des Mittelabschnitts um einen Winkel zwischen 20° und 30° gebogen sind.

3. Verankerungsmittel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Länge eines Armes, gemessen in einer radialen Richtung, zwischen Faltlinien, um die der Arm bezüglich des Mittelabschnitts gebogen ist, und der Faltlinie, um die das freie Ende des Arms bezüglich des restlichen Teils des Arms gebogen ist, in etwa dem Abstand zwischen zwei Faltlinien entspricht, die einander gegenüber liegen und um die zwei Arme bezüglich des Mittelabschnitts gebogen sind.

4. Verankerungsmittel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Breite eines Armes allmählich in einer vom Mittelabschnitt abgewandten Richtung zunimmt.

5. Verankerungsmittel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** in einem Arm ein weiteres schlitzähnliches Loch in einer Längsrichtung des Arms vorgesehen ist.

6. Verankerungsmittel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** ein gebogenes freies Ende eines Arms eine im Wesentlichen rechtwinklige Form hat.

7. Verankerungsmittel nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Plattenabschnitt eine Dicke zwischen 1,2 mm und 3,0 mm hat, vorzugsweise eine Dicke zwischen 1,5 mm und 2,0 mm.

8. Verfahren zur Anwendung eines Verankerungsmittels nach einem der vorhergehenden Ansprüche, unter Verwendung eines an dem Gegenstand angebrachten Stifts, wobei der Stift mit einem Verankerungsgewinde versehen ist, **dadurch gekennzeichnet, dass** ein an dem Gegenstand angeschweißter Stift verwendet wird, der mit einem Teil versehen ist, der ein an seinem vom Gegenstand abgewandten Ende vorgesehenes, äußeres Verankerungsgewinde aufweist, wobei der Teil zu einem Teil des Stifts mit einem größeren Durchmesser derart passt, dass an dem Übergang zwischen dem Teil mit einem Verankerungsgewinde und dem Teil des Stifts mit einem größeren Durchmesser ein Bund gebildet ist, der durch Schrauben des Verankerungsmittels auf den Stift mit dem Befestigungsteil in Kontakt gerät, das ein inneres Verankerungsgewinde aufweist, das an dem Mittelabschnitt des Verankerungsmittels befestigt ist.

Revendications

1. Moyen d'ancrage pour fournir un revêtement ignifuge et/ou résistant à l'usure sur un objet constitué de métal, dans lequel l'accumulation d'une portion de base pliée polygonale est destinée à être fixée sur l'objet par l'intermédiaire d'une broche soudée sur l'objet, qui est pourvue d'un filetage d'ancrage pour recevoir une partie d'attachement attachée à une section intermédiaire polygonale du moyen d'ancrage, comprenant un filetage interne, dans lequel des lèvres qui s'étendent transversalement à ladite portion de base polygonale joignent les bords de ladite portion de base, lesdites lèvres étant repliées à un angle par rapport à ladite section intermédiaire et ayant des lignes de courbure s'enfermant mutuellement, **caractérisé en ce que** les bras joints à la section intermédiaire du moyen d'ancrage sont pliés par rapport à la section intermédiaire à un angle entre 20° et 40°, dans lequel les extrémités libres des bras joints à la section intermédiaire sont pliées par rapport aux bras de sorte que les extrémités libres s'étendent parallèlement aux plaines qui sont positionnées sensiblement perpendiculairement à une plaine s'étendant parallèlement à la section intermédiaire.

2. Moyen d'ancrage selon la revendication 1, **caractérisé en ce que** les bras sont pliés par rapport à la section intermédiaire à un angle entre 20° et 30°.

3. Moyen d'ancrage selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la longueur mesurée dans une direction radiale d'un bras entre des lignes de pliage autour desquelles le bras est plié par rapport à la section intermédiaire et la ligne de pliage autour de laquelle l'extrémité libre du bras est pliée par rapport à la partie restante du bras est approximativement égale à la distance entre deux lignes de pliage qui sont positionnées à l'opposé l'une de l'autre et autour desquelles deux bras sont pliés par rapport à la section intermédiaire.

4. Moyen d'ancrage selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la largeur d'un bras augmente progressivement dans une direction à l'opposé de la section intermédiaire.

5. Moyen d'ancrage selon l'une quelconque des revendications précédentes, **caractérisé en ce que**, dans un bras, un trou en forme de fente est fourni dans une direction longitudinale du bras.

6. Moyen d'ancrage selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**une extrémité libre pliée d'un bras a une forme sensiblement rectangulaire.

7. Moyen d'ancrage selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la section de plaque a une épaisseur entre 1,2 mm et 3,0 mm, de préférence une épaisseur entre 1,5 et 2,0 mm.

8. Procédé pour appliquer un moyen d'ancrage selon l'une quelconque des revendications précédentes en utilisant une broche attachée sur l'objet, ladite broche étant pourvue d'un filetage d'ancrage, **caractérisé en ce qu'**il est utilisé une broche soudée sur l'objet qui est pourvue d'une partie ayant un filetage d'ancrage externe fourni à une extrémité de celle-ci à l'opposé de l'objet, ladite partie correspondant à une partie de la broche ayant un diamètre supérieur, de sorte que, à la transition entre la partie ayant un filetage d'ancrage et la partie de la broche ayant un diamètre supérieur, il est formé un collier venant en contact, par vissage du moyen d'ancrage sur la broche, avec la partie d'attachement, comprenant un filetage d'ancrage interne attaché à la section intermédiaire du moyen d'ancrage.

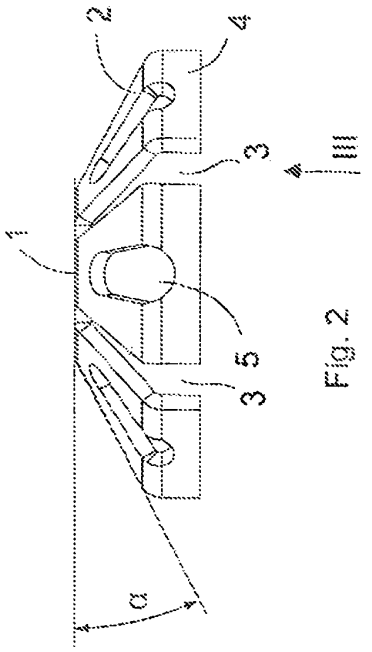

Fig. 2

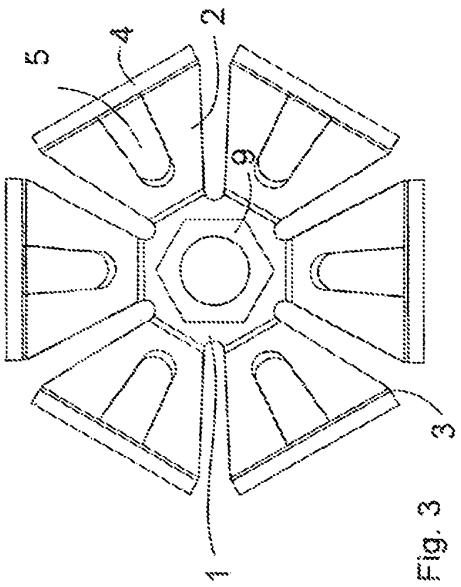

Fig. 3

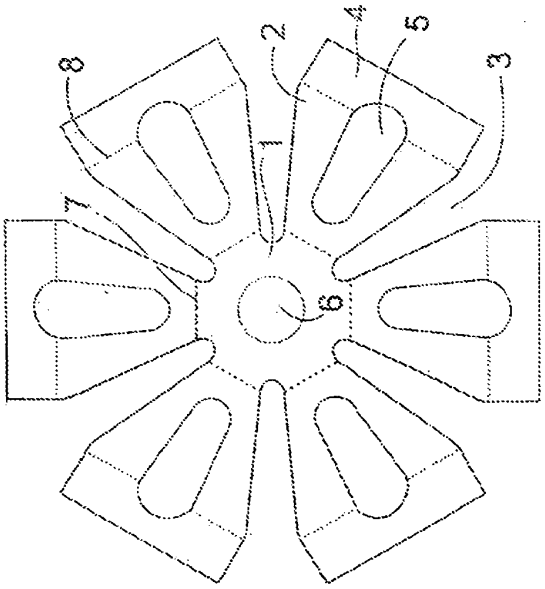

Fig. 1

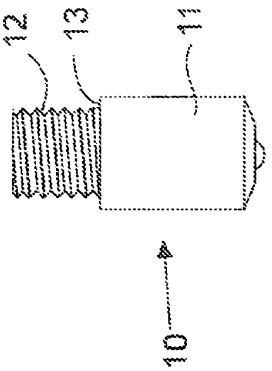

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- NL 193073 **[0002] [0008] [0009]**